



Patent
Docket No. M 5251A EM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of
Lakes et al

Serial No.08/119,318 Examiner: M. Medley
Filed: 09/09/93 Art Unit: 1111
For: BIODEGRADABLE TWO-CYCLE ENGINE OIL
COMPOSITIONS AND ESTER BASE STOCKS

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231, on

August 8, 1994
Date

Rose A. Stowe
Signature of certifier

Rose A. Stowe
Typed or printed name of certifier

DECLARATION UNDER 37 C.F.R. 1.132

Honorable Commissioner of
Patents and Trademarks
Washington, DC 20231

Stephen C. Lakes declares as follows:

1. That I am a coinventor of the subject matter of the above-identified patent application.
2. That I received an M.S. degree in organic chemistry from the University of Cincinnati in 1977.
3. That I am currently employed by Henkel Corporation, Emery Group as a senior chemist working in the field of synthetic lubricants.
4. That I have been continuously employed by Emery and its successor corporation, Henkel Corporation, Emery Group,

as a chemist for the past 20 years.

5. That under my direction and control, the esters of trimethylolpropane and four (4) different carboxylic acids were prepared and tested for biodegradability, pour point, and viscosity under the test protocols set forth in the table below.

6. That the esters listed in the table below were prepared according to the method described on page 8, line 30 to page 9, line 16 of the instant application.

7. That the results set forth in the table below show that examples of the esters taught by Davis (U.S. 4,708,809) at column 3, lines 36-40 as 2-cycle engine oils would not meet the viscosity and/or pour point requirements for a 2-cycle engine oil. More specifically, Davis teaches at column 3, lines 36-40 that esters useful as synthetic oils are those made from C₃-C₁₂ monocarboxylic acids and such polyols as neopentyl glycol, trimethylolpropane, pentaerythritol, etc.

8. That none of the esters listed in the Table below possesses ALL three of the performance properties required of an acceptable 2-cycle engine oil.

TABLE

ESTER ¹	BIODEGRADABILITY ²	POUR POINT ³	VISCOSITY ⁴
TMP n-C ₃	100	-69	2.6
TMP iso-C ₃	0.4	-35	7.12
TMP n-C ₁₂	98	+6	6.68
TMP n-C ₉	97.3	-53.9	4.55
REQUIREMENT	>80	below -25	6-15

- 1- Ester composition. For example, TMP n-C, is the triester of an n-C, carboxylic acid (pentanoic acid) and trimethylolpropane;
- 2- CEC Test Method CEC L-33-T-82
- 3- In °C as determined under ASTM D-97
- 4- In cSt @ 100°C as determined under ASTM D-445

9. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date:

1 AUGUST 1994

Stephen C. Lakes
Stephen C. Lakes